



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/731,950      | 12/10/2003  | Woong-Kwon Kim       | 10125/4132          | 6763             |

7590 01/17/2007  
Brinks Hofer Gilson & Lione  
Post Office Box 10395  
Chicago, IL 60610

|          |
|----------|
| EXAMINER |
|----------|

NGUYEN, HOAN C

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2871

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE  | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS                               | 01/17/2007 | PAPER         |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

26

|                              |                               |                            |  |
|------------------------------|-------------------------------|----------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/731,950 | Applicant(s)<br>KIM ET AL. |  |
|                              | Examiner<br>HOAN C. NGUYEN    | Art Unit<br>2871           |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 October 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) 11, 12, 28-31, 40, 41, 47 and 51-58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 13-27, 32-39, 42-46 and 48-50 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/23/2006 has been entered.

Claim 47 is withdrawn. Claims 55-58 are newly added.

### ***Election/Restrictions***

Applicant's election with traverse of Species I (claims 1-46 and 48-54; Figs. 5) filed on 10/11/2005 is acknowledged. In non-final action mailed on 12/07/2006, the restriction requirement is considered to be final.

Regarding to the amendment filed on 10/23/2006, the amended claims 1, 18, 35 and 46 cited "ONLY the plurality of transparent layers (made of light-shielding color filter patterns) filling a space between the thin film transistor and the liquid crystal layer" as shown in Fig. 5; thus, there should be no other layer being formed between the thin film transistor and the liquid crystal layer.

Art Unit: 2871

Claims 11-12, 28-31, 40-41 and 51-54 are withdrawn since claims cited the features of "a second insulating layer and a third insulating layer", which form between the thin film transistor and the liquid crystal layer. However, these layers cannot be formed between the thin film transistor and the liquid crystal layer due to the amended feature according to Fig. 5.

Furthermore, **new claims 55-58 are also withdrawn since they are not originally elected and presented as following:**

Restriction to one of the following to the following patentably distinct species of the claims invention:

- a. Claims 1-10, 13-27, 32-39, 42-46 and 48-50 drawn to a liquid crystal display device with ONLY two transparent layers (made of light-shielding color filter patterns) filling a space between the thin film transistor and the liquid crystal layer wherein all transparent layers (color filters) are flattened as disclosed in Fig. 5 (elected species on 10/11/2005).
- b. Claims (new claim) 55-58 drawn to a liquid crystal display device with forming trench in a first color filter pattern with half-transmitting mask then filling second color filter in the trench above TFT as disclosed in Fig. 6 (not originally elected species).

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, there is no generic claim.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

New claims 55-58 are directed to a species that is independent or distinct from the invention originally claimed for the following reasons: claims 55-58 are the device claims including the features *"forming a trench in a color filter with half-transmitting mask then forming another color filter in the trench"* that were not originally presented. As originally presented, the examiner has considered and examined only the originally

Art Unit: 2871

presented claims with the features "plurality of the color filters without forming the trench and are flatten" as Fig. 5 shown in the original election on 10/11/2005.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 55-58 are further withdrawn from consideration as being to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 812.03.

Applicant is reminded that upon the cancellation of claims of a non-elected invention; the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be a diligently-filed petition under 37 CFR 1.48 (b) and by the fee required under 37 CFR 1.17(h).

Claims 11-12, 28-31, 40-41, 47, 51-54 and 55-58 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions and species, there being no allowable generic or linking claim. Therefore, claims 1-10, 13-27, 32-39, 42-46 and 48-50 are elected.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2871

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 4-10, 18, 21-27, 35, 37-39, 45-46 and 48-50 are rejected under 35

U.S.C. 102(b) as being anticipated by Sawasaki et al. (US 20030043326A1).

Sawasaki et al. teach (Figs. 25-34) a liquid crystal display device comprising:

Claims 1, 18, 35 and 46:

- a plurality of gate lines 25 formed on a first substrate along a transverse direction, each gate line including a gate electrode;
- a first insulating layer (gate insulating layer 24) formed on the first substrate to cover the gate lines and the gate electrodes;
- a plurality of data lines 26 formed on the first insulating layer along a longitudinal direction, the data lines defining a plurality of pixel regions with the gate lines and each including a source electrode 44;
- a thin film transistor 42 formed at a crossing region of each of the gate and data lines, each thin film transistor including one of the gate electrodes, a semiconductor layer 52, one of the source electrodes, and a drain electrode;
- a color filter R over the first insulating layer in each pixel region, each color filter having one of red, green and blue colors R/G/B, the color filters having a plurality of drain contact holes 50 exposing the drain electrodes;
- a pixel electrode 14 over the color filter in each pixel region, each pixel electrode contacting one of the drain electrodes;
- a common electrode on a second substrate 10, the common electrode facing the first substrate; and

Art Unit: 2871

- a liquid crystal layer 20 interposed between the common electrode and the pixel electrodes.
- ONLY plurality of transparent layers (color filters) including light shielding color filter patterns 10-12 filling a space between the thin film transistor 42 and the liquid crystal 17, the light shield color filter color patterns including at least two of red, green or blue resins.

wherein

Claims 4 and 21:

- each thin film transistor includes a channel on the active layer between the source and drain electrodes.

Claims 5 and 22:

- the light-shielding color filter patterns are formed of the same material as the color filters.

Claims 6 and 23:

- a cell gap between the light-shielding color filter patterns and the common electrodes is greater than zero.

Claims 7, 24, 39 and 48:

- the color filters are inherently formed of a photosensitive resin through a photolithography process.

Claims 8, 25 and 37:

- red, green and blue color filters are formed sequentially from the semiconductor layers towards the liquid crystal layer.

Art Unit: 2871

Claims 9, 26, 38 and 50:

- each of red, green and blue color filter patterns (at shielding regions) has a thickness smaller than each of red, green and blue color filters (at display regions).

Claims 10 and 27:

- each light-shielding color filter pattern has a red color filter pattern, a green color filter pattern and a blue color filter pattern.

Claim 45:

- each of the red, green and blue color filters includes a drain contact hole exposing the drain electrode and wherein the pixel electrode contacts the drain electrode through the drain contact hole 50.

Claim 49:

- the light-shielding color filter pattern is formed in the same process step as the color filter.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2871

2. Claims 2-3, 19-20 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawasaki et al. (US 20030043326A1) as applied to claims 1, 4-10, 18, 21-27, 35, 37-39, 45-46 and 48-50 and in view of Shin (US5825449A).

Sawasaki et al. fail to disclose a liquid crystal display device comprising each semiconductor layer includes an active layer of amorphous silicon and an ohmic contact layer of doped amorphous silicon, wherein the source and drain electrodes are formed on the ohmic contact layer and spaced apart from each other.

Shin teaches (Figs. 2-3) a liquid crystal display device comprising each semiconductor layer includes an active layer of amorphous silicon 4 and an ohmic contact layer 5 of doped amorphous silicon, wherein the source and drain electrodes are formed on the ohmic contact layer and spaced apart from each other for reducing the contact resistance between the active layer and the source/drain regions in the completed device as taught by Shin (col. 1 lines 43-48).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Sawasaki et al. disclosed with each semiconductor layer including an active layer of amorphous silicon 4 and an ohmic contact layer 5 of doped amorphous silicon, wherein the source and drain electrodes are formed on the ohmic contact layer and spaced apart from each other for reducing the contact resistance between the active layer and the source/drain regions in the completed device as taught by Shin (col. 1 lines 43-48).

Art Unit: 2871

3. Claims 13-17, 32-34 and 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawasaki et al. (US6445432B2) as applied to claims 1, 4-10, 18, 21-27, 35, 37-39, 45-46 and 48-50 and in view of Song (US6307602B1).

Sawasaki et al. further disclose a liquid crystal display device comprising colors filters covering gate lines.

Sawasaki et al. fail to disclose a liquid crystal display device comprising a portion of each gate line acts as a first capacitor electrode and a second capacitor electrode on the first insulating layer over each portion of the gate line, wherein each second capacitor electrode and portion of the gate line constitute a storage capacitor with the first insulating layer interposed between the portion of the gate line and the second capacitor electrode.

Song teaches (Fig. 4a-5f) a portion of each gate line acts as a first capacitor electrode and a second capacitor electrode 150 on the first insulating layer (gate insulating layer 111) over each portion of the gate line, wherein each second capacitor electrode 150 and portion of the gate line constitute a storage capacitor with the first insulating layer interposed between the portion of the gate line and the second capacitor electrode. Combination of Sawasaki et al. and Song (Figs. 4-5 show storage electrodes covering gate lines) inherences each color filter including capacitor contact hole exposing the second capacitor electrode, wherein the pixel electrode contact the second capacitor electrodes through the capacitor contact holes.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Sawasaki et al. disclosed with a portion of each gate line acts as a first capacitor electrode and a second capacitor electrode 150 on the first insulating layer (gate insulating layer 111) over each portion of the gate line, wherein each second capacitor electrode 150 and portion of the gate line constitute a storage capacitor with the first insulating layer interposed between the portion of the gate line and the second capacitor electrode for high display quality with preventing shorting between pixel electrodes as Song taught (col. 2 lines 25-34).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (571) 272-2296. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2871

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HOAN C. NGUYEN  
Examiner  
Art Unit 2871

chn

  
ANDREW SCHECHTER  
PRIMARY EXAMINER